DETAILED ACTION

Status of Claims

In the instant case, claims 1-11 are currently pending and under examination on the merits.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on January 29, 2007 is being considered by the examiner, except Citation Nos. 2, 3, 4, 6, and 8, whose copies are not submitted in the present application as required by 37 CFR 1.98(a)(2). Further, WO 99/11818 is considered only insofar as its English abstract. Note that the IDS indicates English translation is submitted for WO 99/11818, which does not appear to be the case.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffin et al. (US 5,756,291) in view of Heller (*Annual Review of Biomedical Engineering,* 2002, 4:129-153) and Smith et al. (*Molecular & Cellular Proteomics,* 2003, 2:11-18).

The claims are drawn to methods for obtaining an aptamer comprising immobilizing to a microarray substrate a plurality of different polynucleotide sequences, contacting a labeled target molecule with said microarray substrate to which said plurality of different polynucleotide sequences are immobilized, determining the binding strength of different polynucleotide sequences to said target molecule, selecting one or more polynucleotides having relatively high binding strengths and immobilizing them to a microarray substrate wherein a mutation is introduced into said one or more polynucleotide, wherein the mutation is one or two base substitutions, wherein said target molecule is labeled with a fluorescent, wherein the contacting step is immersing the microarray substrate in a solution in which the target molecule has been dissolved.

Griffin et al. teach a method for selecting and obtaining an aptamer that specifically binds to a specific target molecule among a mixture of randomly generated pool of polynucleotide sequences that are immobilized to a solid support substrate. They teach that the aptamer selection method further comprises a step of incubating a desired target molecule with the mixture of a

plurality of random polynucleotide sequences, followed by separating the polynucleotide sequences that are bound from those that are unbound to the target molecule, wherein these steps can be repeated as many times so as to identify an optimal aptamer. They further teach that a high-affinity aptamer can be selected by testing the selected aptamer sequences (bound polynucleotide sequences that are identified by "label") for binding affinity and target specificity, wherein those selected aptamer sequences contain base mutations, thereby re-selecting and determining the bases which are involved in the target molecule binding. See columns 1, 19-37, 42-125. Griffin et al. do not teach that the solid support substrate is a microarray substrate, nor do they teach that the target molecule is fluorescent labeled.

Heller teaches that "The automation of DNA microarray systems greatly facilitates their use and ease of operation and helps to eliminate many of the human errors that would be involved in manually carrying out the multiplex hybridization analyses." See page 131. Heller also teaches that microarrays, DNA chips, high-throughput automated systems are produced by many companies. See Table 1.

Smith et al. teach a microarray-based method wherein aptamer sequences are immobilized to a microarray slide and the microarray slide containing the aptamer sequences is contacted with a solution containing test proteins, followed by a step of labeling bound proteins with a fluorescent label Cy3, thereby allowing one to detect the aptamer-target binding by fluorescence. See pages 13, 16-17.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the aptamer selection method of Griffin et al. by incorporating the high-throughput automated microarray system of Heller.

One of ordinary skill it the art would have been motivated to do so with a reasonable expectation of success, because methods of selecting an optimal aptamer sequence from a plurality of randomized polynucleotide sequences have been known in the art as taught by Griffin et al., and therefore, the skilled artisan would have seen the benefit of automating the aptamer selection method by incorporating the teachings of Heller such as reducing the length of experimentation time associated with selecting an optimal aptamer sequence as demonstrated by Griffin et al. Hence, one of ordinary skill in the art knowledgeable of the teachings of Griffin et al. and Heller would have been motivated to select an aptamer sequence by utilizing the automated, high-throughput screening method of microarray system comprising computer-generated random polynucleotide sequences and would have succeeded in arriving at the claimed invention because Smith et al. taught the utility of microarray systems for identifying aptamer-target protein binding. Since both skills and knowledge required to arrive at the claimed invention were within the technical grasp of one of ordinary skill in the art at the time of the invention, the claimed invention taken as a whole would have been *prima facie* obvious at the time the application was filed.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANA SHIN whose telephone number is (571)272-8008. The examiner can normally be reached on Monday through Friday, from 8am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Douglas Schultz can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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